

REMARKS

Claims 1-5, 7-10, 12-16 and 28 are pending. Claims 1-5, 7-10, 12-16 and 28 stand rejected.

Applicants wish to thank the Examiner for the courtesy extended to Applicants' representative during the telephone interview of April 10, 2003. During that interview, the independent claims and the application of the Haeffling and Hadar references was discussed. It was agreed that neither the Haeffling nor Hadar references disclosed or suggested that the orifice has a conical portion adjacent to the working tip and that the polymer coating is disposed over at least a portion of the surface of the conical orifice.

Rejections Under 35 U.S.C. Section 102

The Office Action at page 2, paragraph 2 sets forth "claims 1-5, 7, 8, 9, 12, 14-16 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Haeffling et al. (US 4,691,854)." Applicants respectfully submit that this rejection is overcome by the Amendments to the claims for the reasons set forth below.

Applicants' invention, as recited in claim 1 (as amended), includes features which are neither disclosed nor suggested by Haeffling, namely:

...an orifice extending along a longitudinal axis of the body and the working tip and having a conical portion adjacent the working tip...

...a polymer coating disposed over at least a portion of a surface of the conical portion of the orifice. (Emphasis Added)

These features are described in Applicants' specification, for example, at page 4, lines 10-25 and Fig. 2A-2B.

According to claim 1, the bonding tool has an orifice which extends along a longitudinal axis of the body and the working tip, and has a conical portion adjacent the working tip. Additionally, the polymer coating is disposed over at least a portion of a surface of the conical portion of the orifice.

Haepling is relied upon as "[disclosing] a bonding tool comprising an orifice along the longitudinal body, a polymer, non-conductive, coating disposed over at least a portion of a surface of the orifice, wherein the coating extends along an entire length of the orifice, or the exterior surface of the tip, or the body of the tip." Office Action at page 2, paragraph 2. (Emphasis Added) Applicants respectfully disagree with this contention, specifically the characterization that Haepling discloses a polymer, non-conductive coating. According to Haepling, "a layer of metal oxide 21 is disposed on the tip 23 of the capillary 1. ...In the embodiment shown in Fig. 4, a second non-conductive material 21 is deposited on the tip of the capillary and in particular on the pressure bearing surface 37. ...This coating is normally in the range of 2200 +/- 300 angstroms of aluminum oxide or silicon oxide. Col. 2-line 68 through col. 3, line 30. (Emphasis Added) Thus, according to Haepling, the non-conductive coating is not a polymer at all, but rather an oxide of aluminum or silicon. Further, although in an alternate embodiment as shown in Fig. 7 of Haepling "a high impact resistant plastic material 53...is bonded to the cylindrical portion 27 of the capillary 1..." This type of plastic material 53 is not a coating but rather an entire tip of the capillary 1. Accordingly, Haepling fails to disclose or suggest a polymer coating disposed over at least a portion of the surface of the orifice.

In order to expedite prosecution of the present application, however, Applicants have further amended claim 1 to yet further distinguish over Haepling. Specifically, Haepling fails to disclose or suggest that a polymer coating is disposed over at least a portion of a surface of the conical portion of the orifice where this conical portion is adjacent the working tip of the bonding tool.

In contrast, Applicants' invention, as recited in amended claim 1, requires that the orifice has a conical portion adjacent the working tip and that a polymer coating is disposed over at least a portion of the surface of the conical portion of the orifice.

It is because Applicants have included the features of i) an orifice extending along a longitudinal axis of the body and the working tip with a conical portion adjacent the working tip and ii) a polymer coating disposed over at least a portion of the surface of the conical portion of the orifice, that Applicants are able to reduce the build-up of contamination and thereby increase the wear limits of the bonding tool. Haepling does not achieve this advantage because Haepling does not have an orifice with a conical portion

adjacent the working tip with a polymer coating disposed over at least a portion of the surface of the conical portion of the orifice.

For the reasons set forth above, claim 1 is neither disclosed nor suggested by Haepling and, thus, is not subject to rejection under 35 U.S.C. Section 102(b) as being anticipated by Haepling. Accordingly, Applicants respectfully request that the rejection of claim 1 be withdrawn and the claim allowed.

Although not identical, claims 8 and 28 recite features similar to those of claim 1 and, thus, are likewise not subject to rejection for at least the reasons set forth above with respect to claim 1.

Claims 4-5, 7, 9, 12, and 14-16 depend upon claim 1 and, thus, are likewise not subject to rejection for at least the reasons set forth above with respect to claim 1.

Claim 10 stands rejected under 35 U.S.C. Section 102(e) as being anticipated by Hadar et al. (U.S. Patent 6,171,456). Applicants respectfully submit that this rejection is overcome by the amendments to the claims for the reasons set forth below.

Hadar is relied upon as "[disclosed] a bonding tool having a body, working tip, and an orifice. The orifice has a coating disposed on the surface thereof, and that the coating is about 2 microns thick." Office Action at page 3, paragraph 3. Hadar does not disclose nor suggest, however, an orifice having a conical portion adjacent the working tip and a polymer coating disposed over at least a portion of the surface of the conical portion of the orifice. Accordingly, Applicants respectfully submit that the rejection of claim 10 as being anticipated by Hadar should be withdrawn and the claim allowed.

Rejections Under 35 U.S.C. Section 103

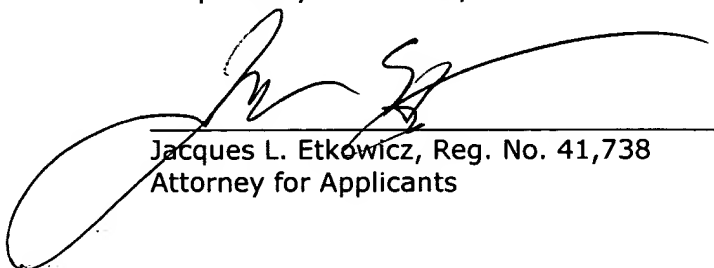
The Office Action at page 4, paragraph 6 sets forth "claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haepling et al. (US '854)". Applicants respectfully submit that this rejection is overcome by the amendments to the claims for the reasons set forth below.

As discussed above with respect to claim 1, Haepling fails to teach an orifice having a conical portion adjacent the working tip and a polymer coating disposed over at

least a portion of the surface of the conical portion of the orifice. Thus, the rejection of claim 13 (which depends upon claim 1) should also be withdrawn and the claim allowed in view of the arguments set forth above with respect to claim 1.

In view of the amendments and remarks set forth above, Applicants respectfully submit that this application is in condition for allowance which action is respectfully requested.

Respectfully Submitted,



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Enclosures:

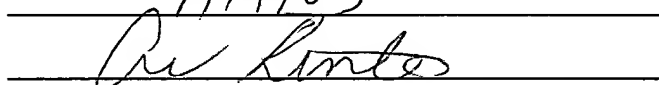
Version with markings to show changes made

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VERSION WITH MARKINGS TO SHOW CHANGES MADECLAIMS:

1 1. (Twice Amended) A bonding tool for bonding a wire to a substrate,
2 the bonding tool having a body and a working tip coupled to one end of the body, and
3 comprising:

4 an orifice extending along a longitudinal axis of the body and the working tip
5 and having a conical portion adjacent the working tip; and

6 a polymer coating disposed over at least a portion of a surface of the conical
7 portion of the orifice.

1 8. (Twice Amended) A bonding tool for bonding a wire to a substrate,
2 the bonding tool having a body and a working tip coupled to one end of the body, and
3 comprising:

4 an orifice extending along a longitudinal axis of the body and the working tip
5 and having a conical portion adjacent the working tip; and

6 a coating disposed over at least a portion of a surface of the conical portion
7 of the orifice,

8 wherein the coating is a polymer disposed along an interior surface of the
9 orifice and one of i) an Alumina, ii) Si_3N_4 , iii) silica, iv) a combination of 12% silica and
10 88% Alumina, and v) a Diamond like coating (DLC) disposed along an exterior portion of
11 the orifice.

1 10. (Twice Amended) A bonding tool for bonding a wire to a substrate,
2 the bonding tool having a body and a working tip coupled to one end of the body, and
3 comprising:

4 an orifice extending along a longitudinal axis of the body and the working tip
5 and having a conical portion adjacent the working tip; and

6 a polymer coating disposed over at least a portion of a surface of the conical
7 portion of the orifice,

8 wherein the coating has a substantially uniform thickness of up to about 2.0
9 microns.

1 28. (Amended) A bonding tool for bonding a wire to a substrate, the
2 bonding tool having a body and a working tip coupled to one end of the body, and
3 comprising:

4 an orifice extending along a longitudinal axis of the body and the working
5 tip and having a conical portion adjacent the working tip; and

6 a polymer non-conductive coating disposed over at least a portion of a
7 surface of the conical portion of the orifice.